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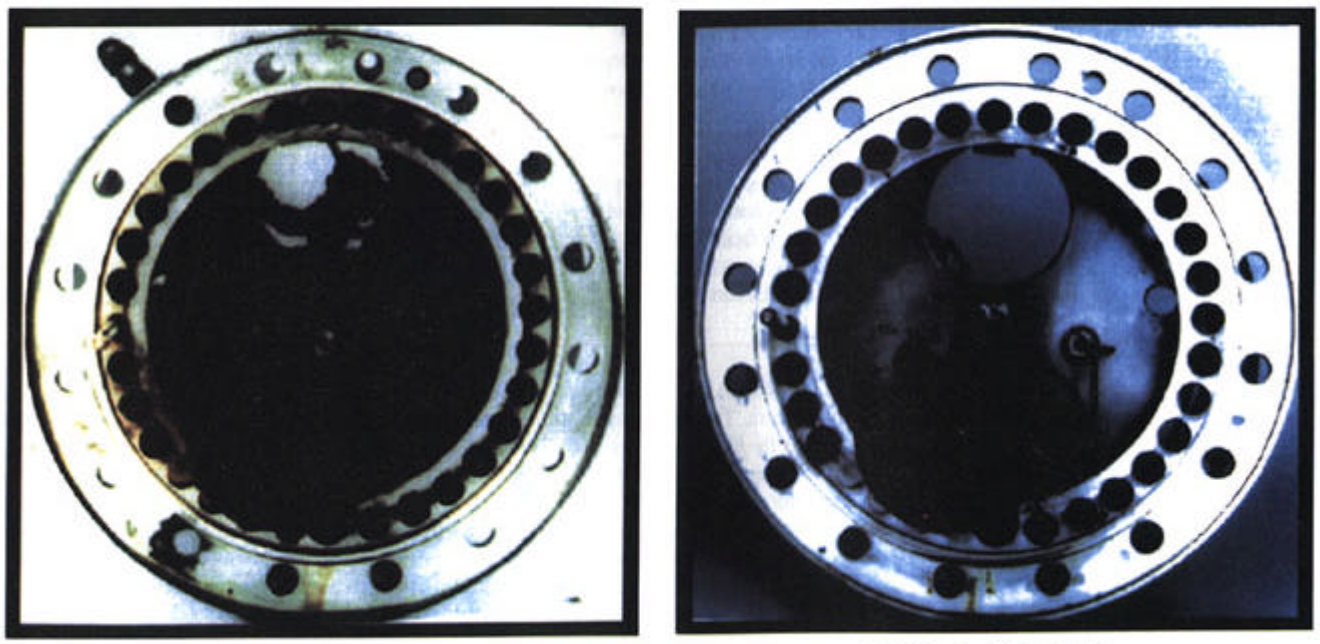
Success Story

New Improved Turbine Engine Lubricant

J57 ENGINE OIL SUMP AFTER 100 HOURS



MIL-L-7808J MIL-L-7808K

Payoff

The new MIL-L-7808K 4 centiStoke (cSt) lubricant will offer greater thermal stability and reduced deposition tendencies (as shown above in the no. 6 sump of the J57 engine) for current and advanced aircraft that require high temperature lubricant performance. Reduced maintenance is envisioned for advanced engines which stress the lubricant with higher operating temperatures. It has already fulfilled the higher temperature requirements of the F-22's F119 engine.

Accomplishment

A new specification for Air Force turbine engine lubricants has been generated by the Aero Propulsion and Power Directorate, as a result of a joint program with the Materials Directorate. This new specification (MIL-L-7808K), requiring a viscosity of 4 cSt at 100°C, replaces MIL-L-7808J, which required a viscosity of 3 cSt at 100°C. The 4 cSt lubricant provides increased thermal oxidative stability and decreased deposit forming tendencies, while retaining low temperature pumpability.

Background

In order to provide worldwide, all-weather capability, Air Force turbine engine lubricants must be pumpable at -60°F. Due to the nature of synthetic lubricants, this requirement represses the high temperature capabilities. The Directorate recognized that a new lubricant formulation would be needed for advanced, higher performance engines, including the F119 engine in the F-22. Stringent target goals for the new MIL-L-7808K (4 cSt) lubricant were tailored through interfacing with the lubricant industry and the Advanced Tactical Fighter System Program Office (ATF SPO). Once convinced that the F119 engine would benefit from the higher performance lubricant, the ATF SPO authorized its use for F-22 prototype flights. Only one (of the more than 30 candidates) 4 cSt lubricant has completed qualification screening evaluations thus far. This lubricant performed very well during F-22 prototype flights. Two additional candidates look very promising and may be qualified by early 1995.

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Additional information

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